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Arizona Cogeneration Association
(d.b.a. Distributed Energy Association of Arizona)
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September 27, 2002

Nancy Cole, Supervisor
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Arizona Corporation Commission
1200 W. Washington
Division: Hearing
Phoenix, AZ 85007

Arizona Corporation Commission
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Re: In the Matter of the Application of Tucson Electric Power Company for Approval of New Partial Requirements Tariffs; Modification of Existing Partial Requirements Service Tariff 101; And Elimination of Qualifying Facility Tariffs

Docket No. E-01933A-02-0345

E-01933A-98-0471

Dear Ms. Cole:

Enclosed for filing in the above-captioned proceeding are the original and ten copies of the testimony of Peter Chamberlain, witness for the Arizona Cogeneration Association, in the above captioned docket.

Please let me know if you have any questions. I can be reached at 602-371-1333.

Sincerely,

Robert Baltes
President
Arizona Cogneration Association

Enclosure

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BEFORE THE ARIZONA CORPORATION COMMISSION 2002 SEP 27 P 8: 41

Arizona Corporation Commission
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AZ CORP COMMISSION
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WILLIAM A. MUNDELL
Chairman
JIM IRVIN
Commissioner
MARC SPITZER
Commissioner

IN THE MATTER OF THE APPLICATION OF TUCSON ELECTRIC POWER COMPANY FOR APPROVAL OF NEW PARTIAL REQUIREMENTS TARIFFS; MODIFICATION OF EXISTING PARTIAL REQUIREMENTS SERVICE TARIFF 101; AND ELIMINATION OF QUALIFYING FACILITY TARIFFS

Docket No. E-01933A-02-0345

1. The Arizona Cogeneration Association (d.b.a. Distributed Energy Association of Arizona) provides the attached testimony of Peter Chamberlain, witness for the Arizona Cogeneration Association, in the above captioned docket.

2. The Arizona Cogneration Association requests that all pleadings, correspondence, discovery, and other documents be served on the following:

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Fax 602-371-0675
bbaltes@bvaeng.com – Preferred Communication

Respectfully submitted this September 27, 2002.

Robert Baltes

President
Arizona Cogeneration Association

CERTIFICATE OF SERVICE

I hereby certify that the original and 10 copies of the TESTIMONY OF PETER CHAMBERLAIN were filed with Docket Control, Arizona Corporation Commission, 1200 W. Washington Street, Phoenix, AZ 85007, on the 27th day of September 2002, and a true and correct copy was sent by U.S. mail, first-class and postage prepaid, to each of the following:

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BEFORE THE ARIZONA CORPORATION COMMISSION

WILLIAM A. MUNDELL
Chairman
JIM IRWIN
Commissioner
MARC SPITZER
Commissioner

IN THE MATTER OF THE APPLICATION OF TUCSON ELECTRIC POWER COMPANY FOR APPROVAL OF NEW PARTIAL REQUIREMENTS SERVICE TARIFFS, MODIFICATION OF EXISTING SERVICE TARIFF 101, AND ELIMINATION OF QUALIFYING FACILITY TARIFFS

Docket No. E-01933A-02-0345

Testimony of Peter F. Chamberlain

On behalf of the

Arizona Cogeneration Association

September 27, 2002

Q. Please state your name and affiliation.

A. My name is Peter F. Chamberlain, dba Chamberlain Energy Consulting. My office address is 215 East 79th Street, New York, NY. I am representing the Arizona Cogeneration Association in this proceeding.

Q. Please state your background and expertise.

A. I have worked in energy-related fields for over 20 years. I have been employed by Stone & Webster Engineering Corporation, Westvaco Corporation and BOC Gases Company. I am currently an independent energy consultant, working primarily in the development of competitive wholesale electric markets and the creation of standardization efforts for the interconnection and operation of distributed resources, including technical, contractual and process standards and the development of appropriate rates for standby service.

I have testified in many state regulatory proceedings in California, West Virginia, Virginia, Maine, and Maryland. I have testified before the FERC on several occasions and before the Energy Subcommittee of the US House of Representatives.

I have negotiated numerous rates and contracts for electric supply, including standby, maintenance and supplemental service, as well as purchase power agreements for cogeneration facilities. I have testified on numerous occasions on the subject of rate design and cost allocation.

I have actively participated on behalf of distributed resources in the development of wholesale market mechanisms that accommodate market entry for distributed generation and other demand responsive resources into the wholesale markets. These include the FERC ANOPR on standard interconnection policies as well as the upcoming proposed rulemaking on market designs and market mitigation.

I hold a Bachelor of Science Degree in Electrical Engineering from Clarkson College of Technology and an MBA Degree from the Wharton School of the University of Pennsylvania.

Q. What is the purpose of your testimony?

A. I will report on the analysis that I was asked to perform by ACA, my conclusions and recommendations.

Q. Can you please summarize your conclusions?

A. Having reviewed TEP's filling I have made 4 conclusions that raise significant problems with the rates as filed and result in rates that I believe are discriminatory and not "just and reasonable." This Commission should reject TEP's tariffs as filed unless and until the deficiencies noted below have been corrected.

1. **The rates developed for "partial requirements customers" are not based on the cost of providing the service to customers they purport to serve.**
2. **The development of the rates rely on varying and inconsistent assumptions.**
3. **Rates for supplemental service do not reflect the same cost bases as TEP's rates for full requirements customers – whether fully bundled or direct access.**
4. **The rates alter existing rates without any cost-of-service or rate design rationale, in violation of federal regulations and PURPA.**

Q. Does TEP already have rates for back up and maintenance service?

A. Yes. QF tariffs 105 and 106 provide for these services based on the size of the generator.

Q. Are these rates cost-based?

A. Yes – at least the tariffs themselves so indicate. In both tariffs, "Terms and Conditions" item 6 apply a condition of service that the "...rates remain compensatory by ensuring that usage retains the characteristics of partial requirements service." Thus, I believe these tariffs are intended to be cost-based.

Q. Has TEP suggested that these rates are NOT cost-based?

A. Not to my knowledge. TEP justifies eliminating these tariffs based solely on their inapplicability to non-QFs. TEP is essentially arguing that a generator's own heat rate is inextricably linked to the cost of providing back up and supplemental service to that generator. In my opinion, this is a frivolous argument and should be rejected.

Q. For the same customer load profile, would non-QFs impose different costs on TEP's system than QFs?

A. Absolutely not. The relative efficiency of a generator has little to do with the cost TEP incurs serving the customer's load.

Q. Why can't the existing rates be used for back up service?

A. I see no reason why they can't be applied to non-QF generation, as well. I assume that the 105 & 106 tariffs had a legitimate cost basis for back up service and, therefore, they ought to be cost-based and applicable to all back up service.

Q. Which existing and potential QFs may be most affected?

A. Because TEP is proposing that largely variable rate components for back up service be replaced by largely fixed rate components, smaller renewable generation like solar, wind and hydro are impacted the most , in a relative sense. The availability of the service proposed is severely (and, I believe, improperly) limited to a 5% load factor. For a solar unit supplying its output to a customer load, it would be very difficult to provide the necessary back up requirements of the customer during the evening and night and still remain within the 5% load factor limitation.

Q. Do you agree that TEP's proposed rates for back up service are a better reflection of PURPA's intent as promulgated by the FERC?

A. Just the opposite. TEP's proposed tariffs would stand PURPA on its head. As I discuss later, both the back up rates and supplemental rates proposed depart significantly from "...consistent system-wide costing principles...". Section 292.305 (a) of the Code of Federal Regulations to which Mr. Snook referred was meant to address precisely the barrier TEP seeks to erect with its new PRS proposals.

Q. Is PURPA still in effect?

A. Yes.

Q. Are the regulations that FERC promulgated implementing PURPA still in effect?

A. Yes and in my opinion, TEP's PRS rate proposals for back up and supplementary service – at least insofar as they apply to QFs – are inconsistent with those regulations.

Q. Are the PRS tariffs based on cost of service principles?

A. No, or at least not with respect to PRS customers. I have not reviewed the cost principles used to develop rates for full requirements customers. However, the de facto application of those rates to back-up and maintenance service grossly distorts the cost of providing service to PRS customers.

Q. Has TEP used consistent assumptions in the derivation of the PRS rates?

A. No, it has not. For example, it derives a back up rate based on the revenue requirements of a full requirements customer operating at a load factor in excess of 50%. Yet the back up rate precludes a customer from taking service in excess of a 5% load factor. TEP goes on to develop the rate design based on the assumption that the same customer will operate at a 10% load factor.

Q. Why do you believe these assumptions are inconsistent?

A. It appears that TEP has designed the PRS tariff rates assuming that 100% of the cost of transmission and distribution facilities used to serve the PRS customer's annual non-coincident peak load must be recovered from PRS customer, irrespective of the level of actual consumption.

Q. Is that a reasonable assumption?

A. No, it is not. TEP fails to apply the same diversity assumption it applies to full requirements customers to the PRS tariffs through the imposition of a 100% ratchet on both back up and supplemental service. Moreover, TEP ignores the near-impossibility that all back up customers would be taking service at all the monthly system peaks (particularly given the 5% load factor limitation). Instead, it allocates more T&D cost recovery to back up customers than it does to full requirements customers.

Q. Is this allocation consistent with TEP's Open Access Transmission Tariff (OATT)?

A. No, it is not. TEP employs different assumptions in the development of its Open Access Transmission Tariff (OATT) rates than it does in the development of its proposed back up rates. That is, TEP's OATT rates are developed assuming that monthly peak loads vary from month to month. In contrast, it appears that TEP developed its back up rate proposals assuming that back up customers require a constant amount of transmission service (based on its annual, non-coincident peak load) all year long and that ALL back up customers needed service at the same times throughout the year.

Q. Does TEP's OATT filed with the FERC require that firm transmission be purchased only on an annual peak basis?

A. No. It can be purchased on an annual, monthly, weekly and/or daily basis.

Q. Should a backup customer be required to purchase transmission service as if it needed it 100% of the time?

A. No. However, this is what it appears TEP is requiring back up customers to do. The 23 month ratchet at 100% of contract demand contained in the PRS tariffs does just that.

Q. Are TEP's full requirements customers required to pay for transmission costs based on 100% of their respective annual non-coincident peak demand?

A. No, TEP's full requirements customers are not required to purchase transmission service to meet 100% of their annual peak usage. The ratcheting provision contained in LLP-14 and LLP-13 (and corresponding Direct Access tariffs) require a minimum billing demand of <u>only</u> 66.67% and 50%, respectively and only looking back 11 months - rather than the 23 month period required in the PRS tariffs.

Q. Are FERC-approved transmission charges always applied on a kw basis?

A. No. In fact, both PJM and the New York Independent System Operator (NYISO) calculate their respective OATT charges on a MWHr basis for firm service. There are no associated demand charges. A transmission customer pays as he goes. Thus, a 5% load factor customer would only pay for the MWHrs consumed and would not be forced to pay a ratcheted demand charge based on its annual non-coincident peak.

Q. Is a ratchet based on 100% of a back up customer's annual non-coincident peak load consistent with a 5% load factor limitation?

A. Absolutely not. TEP would require that a back up customer pay for all facilities that would be used to provide service to that customer and then deprive the customer the use of those facilities 95% of the time. Under TEP's rate proposals as filed, I see little support for this limitation.

Q. Is the 5% load factor limitation reasonable?

A. No. It requires that a DG unit be available and operate 95% of the time, including maintenance. When you consider the need for maintenance, a DG would have to have a forced outage rate of LESS than 5% in order to stay within the limits. I would be very surprised if TEP's own generating units operate anywhere close to this level of forced outages.

Q. Should ancillary services be ratcheted?

A. I do not believe so. These are predominantly charges designed to recover operating expenses directly related to actual usage, such as frequency and voltage support, reactive power, energy imbalance and spinning and non-spinning reserves. I believe they should be recovered through an energy charge, rather than a per kW charge, as PJM and the NYISO tariffs prescribe. At a minimum, however, the charges should not be ratcheted.

Q. Have you determined the approximate effect of not properly treating transmission charges in the back up rate?

A. Yes. Although I do not have the workpapers necessary to determine exactly how TEP reached its back up rates, I have compared the proposed rates to TEP's full service direct access rates.

When you properly consider the variable nature of transmission costs incurred to provide back up service (limited to a 5% load factor) and full requirements service (assuming a 65% load factor), the result indicates that, under TEP's proposed rates for back up service, <u>back up customers would pay over 22% more fixed and variable T&D costs than a full requirements customer</u>.

Q. Are TEP's rates for supplemental service reasonable?

A. No. Under TEP's proposed rates, <u>a customer would pay over two times</u> as much for supplemental service (at a 65% load factor) as the same load would pay under the direct access rate for a full requirements customer. This is an absurd result.

Q. What rates should a supplemental service customer be charged?

A. I do not understand why the applicable existing retail rates are not appropriate for supplemental service. TEP has not provided any arguments for doing otherwise. Further TEP's methodology used to derive the PRS rates, as I understand Mr. Snook's testimony, improperly assumes that the combined load factor of the individual PRS classes is 10%.

I do not understand why a combined load factor for both back up and supplemental service is relevant to determining different rates for distinct types of service.

As a result, however, the cost of supplemental service (heavily weighted by the energy component of the rate) to a customer with on-site generation will always be higher than a full requirements customer (with a load identical to the supplemental load) as long as the load factor for supplemental load exceeds roughly 10 to 15%.

I believe TEP's approach essentially seeks to recover the revenues attributable to a 50%+ load factor full requirements customer, from a supplemental customer operating at a very low load factor, perhaps 5-10%. When the supplemental rates are applied to a more likely load factor for PRS customers – perhaps 50% to 75% - the rates will substantially over-recover revenues.

Q. Could you please summarize your testimony?

A. Yes. TEP was inconsistent in the assumptions it used in developing PRS rates. While assuming a 10% overall load factor for the PRS customer, it assumed a 5% load factor for back up customers and used the full requirements customer classes' respective load factors to determine revenue requirements from that 10% load factor customer. Thus, a revenue requirement, based on a high load factor class needs to be recovered from a class of customers assumed to be operating at a 10% load factor. It appears that TEP would begin to over-recover revenues whenever the PRS class load factor exceeded 10%. PRS customers, as a class, will almost certainly operate at a higher load factor.

TEP's failure to recognize the likely diversity of the back up service it would be providing (and the corresponding reduction in transmission costs) as well as the more variable manner in which transmission charges are recovered from full requirements customers and wholesale customers.

Based on my analysis of these proposals, I have concluded that rates for back up service over-recover transmission and distribution costs, given the 5% load factor limitation. The demand charge for each PRS rate should be reduced accordingly.

The rates for supplemental service grossly over-recover fixed and variable costs, in some cases by over 100% due to improper assumptions about the load characteristics of supplemental customers. Rates for supplemental service should be consistent with the full requirements direct access rates in both design and amount.

Q. Do you have other concerns with the proposed PRS rates?

A. Yes, I do. PRS 13 collects demand charges for the first 200 kWs in a fixed, monthly customer charge. Back up service in excess of 200 kW is charged a per kw charge. As a result, a 1000 kW customer who installed a 100 kW generator would be forced to pay for 200 kW of back up service and 900 kW of supplemental service – 1100 kW in total. The result is a double collection on 100 KW without any justification.

In addition, the PRS rates would now require a dedicated phone line – even for units under 200 kW. There is no justification for the need of this costly provision. Such a provision is not required for full requirements customers, whose loads could swing many MWs without any on-site generation and without notice to the utility.

Q. How will the billing units be determined for back up and supplemental service under TEP's proposals?

A. Demand charges are fairly straightforward. Back up demand will be fixed and based on generator size. Supplemental demand will be the higher of the actual demand in the month less the back up demand; or the highest supplemental demand recorded over the last 23 months.

However, it is not at all clear how energy charges will be assessed. Inflows will be measured with no obvious way to allocate energy charges between back up and supplemental.

TEP should provide billing protocols it intends to use so that they could be evaluated in the proper development of any tariff changes.

Q. Should TEP require a generator to purchase back up for all of its generating capacity?

A. No. In some cases, a customer may elect to install multiple generating units instead of one larger unit. It is far less likely that five small generators will simultaneously fail than it is that one single generator will fail – albeit small in both cases. A customer should only have to purchase the amount of back up it desires.

Q. Does this conclude your testimony?

A. Yes, it does.